

(12) **UK Patent Application** (19) **GB** (11) **2 243 578** (13) **A**  
(43) Date of A publication 06.11.1991

(21) Application No 9007369.3

(22) Date of filing 02.04.1990

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(51) INT CL<sup>a</sup>  
**G09F 3/02, B42D 15/00**

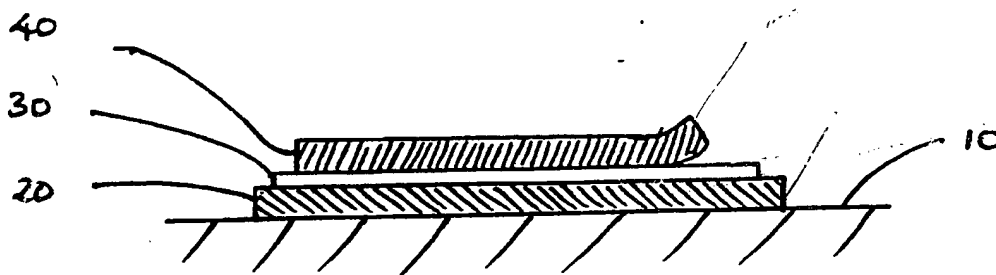
(52) UK CL (Edition K)  
**B6A AC43 AC51 AC52 AC71 ATC**  
**B8F FBG**

(56) Documents cited  
**GB 2233278 A WO 88/01288 A**

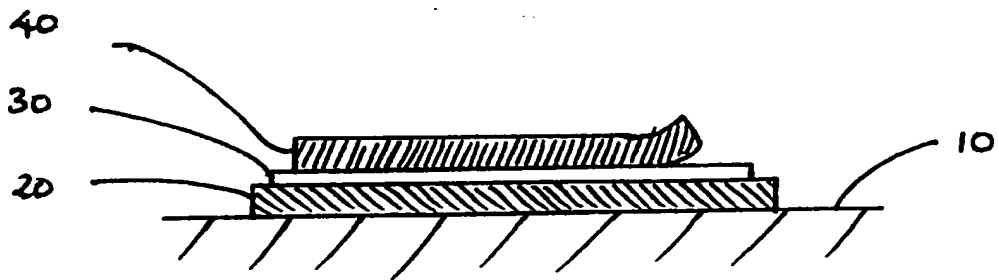
(58) Field of search  
**UK CL (Edition K) B6A AK AL ATC, B8F FBG**  
**INT CL<sup>a</sup> B42D, G09F**  
**Online databases: WPI**

(54) **Security label**

(57) A security label comprises a backing layer (20), a design layer (30) and an upper removable layer (40). When the upper layer is peeled back to expose the design layer, so as to expose the design layer to an actuating influence such as ultraviolet light, the design layer changes colour. This indicates that the article (10) to which the label has been applied is genuine. The design layer (30) may be a photochromic ink or other verifiable substance such as UV reactive inks, fluorescent inks, magnetic inks, IR inks, transfer-type inks, optical variable devices, holograms or the use of rare earth minerals. As an alternative, the design layer may be applied directly to the article. The removable layer may be peeled or scratched off.



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SECURITY LABELS

The present invention relates to security labels.

Certain consumer and trade products, such as for example brake linings for vehicles, have in the past been susceptible to copying and counterfeiting. There is a need for consumers or trade purchasers of such products to be able to determine easily and quickly whether the product which they are intending to buy is in fact genuine. It is this need that the security label of the present invention is intended to meet.

It is a first object of the present invention to provide a security label enabling a purchaser of a product to determine easily and quickly whether that product is genuine.

It is a further object to provide a security label in which verification is capable of being quickly carried out, without expensive and complicated reading equipment.

It is a further object of the invention to provide an inexpensive means of verifying that a product is genuine.

According to the present invention there is provided a security label comprising a backing layer carrying or incorporating a verifiable or active substance and a removable upper layer which, when removed, allows the substance to be exposed to an actuating influence.

Desirably, the substance comprises a photochromic substance, and the actuating influence ultraviolet light.

According to another aspect a method of verifying the genuineness of an article comprises applying a verifiable or active substance to an article or to a label affixed thereto, removing a protective layer from the substance, applying an actuating influence to the substance, and determining the genuineness or otherwise of the article according to the reaction of the substance.

The invention may be carried into practice in a number of ways and one specific embodiment will now be described with reference to the figure which shows an exemplary security label. The drawing is schematic and the vertical dimension has been much exaggerated for the sake of clarity.

The illustrated label comprises an adhesive-backed backing layer 20, on the surface of which is an ink or other marking material design 30. On top of the design layer there is an adhesive-backed removable layer 40, typically of paper, which can be peeled back to reveal the design underneath. Desirably the adhesive backing (not shown) on the removable layer 40 is of a low tack adhesive so that the layer can be removed and replaced several times.

The design layer 30 makes use of an ink or other material incorporating a photochromic component. When

the removable layer 40 is peeled back, the design layer becomes exposed to the daylight and if the photochromic ink is properly chosen (as will be described below) it will change colour under the influence of the naturally occurring ultraviolet radiation. Alternatively, the marking material could be chosen so that it would respond to ultraviolet light of only below a specific wavelength, and in that case the user would first peel back the removable layer then apply a flash of ultraviolet light at the required frequency to make the photochromic component in the ink react. The ink design would then change colour.

The way in which the label would be used in practice is as follows. A manufacturer of for example spare parts for vehicles would purchase labels of this type and probably during the manufacturing process he would adhere them to a product 10 to be protected. When the product reaches the point of required checking, a person wishing to ascertain whether the product is indeed genuine would simply peel back the removable layer 40 so exposing the ink design layer 30. By virtue of the ultraviolet radiation either in the ambient light or from a special hand held unit, the photochromic components in the design layer would change colour in a specific fashion indicating the product to be genuine. Typically, for example, the design layer might comprise the logo of the manufacturer printed in an ink which, until ultraviolet light is applied, appears invisible or virtually invisible to the naked eye. When UV is applied the logo might turn yellow or blue. If desired, the removable layer 40 can be replaced and in the absence

of UV light the design will gradually revert back to its original condition.

Now that the basic idea has been described some variations and options will be mentioned. It is intended that any one or more of these variations or options may be taken, and that they may be combined in any compatible combination.

The product 10 to which the label may be applied could be any type of manufactured product or document that might require its genuineness to be verified. Exemplary documents could include such things as passports, airline tickets, bank books and the like.

The adhesive by which the label is secured to the product 10 might be a permanent adhesive or a low tack adhesive, enabling the label to be removed and re-used if required. If the backing layer 20 is capable of securement to the product 10 without an intermediate adhesive layer then the adhesive layer may be omitted. This might be possible if, for example, the backing layer 20 and the surface of the product 10 are both of a plastics material.

The backing layer 20 will typically be of paper, but could be of a plastics material or even a metal foil. The ink design layer 30 might be applied, alternatively, directly to the product 10 in which case the backing layer 20 could be dispensed with.

The removable layer 40 again is desirably paper, but could be of a plastics or any other type of flexible

material (including metal or wood-based materials) capable of being peeled off of the ink design layer.

The adhesive securing the removable layer to the design layer will usually be of the low tack type (for example of the type used on BLICK (trade mark) labels) so that the layer can be removed and replaced a number of times. Alternatively, a conventional adhesive might be used in which case the layer would simply be removed once and not replaced. If the removable layer is capable of securement to the design layer 30 and/or the backing layer 20 without the use of an intermediate adhesive, the adhesive might be dispensed with. Thus, there is probably no need for an adhesive to be used if both the removable layer and the backing layer are made of a plastics material.

Between the ink design layer 30 and the movable layer 40 there may be an intermediate protective layer (not shown), for example of silicone wax-based substance, a plastics material or varnish. This assists in protecting the design layer 40 from oxidation, prevents the photochromic material from leaching up into the releasable layer and also helps to ease release of the releasable layer as it is peeled back. The protective layer may be applied by printing or in any other convenient manner.

The design layer 30 will make use of a printing ink or other substance incorporating at least one photochromic component which changes colour under the influence of ultraviolet light. According to the component used, the colour change could be permanent, or the component

could revert back to its original deactivated state either once the ultraviolet light had been removed or on the application of white light. Preferably, at least some of the design layer 30 is colourless or transparent ("invisible") in its normal state.

The photochromic ink or other photochromic marking material is applied to the backing layer 20 in any convenient manner. Lithographic or other known printing techniques could be used, either to coat the entire surface of the backing layer, or only selected regions. Hot foil, pen/pencil - type applicators, ink jet printing or other methods could be used. One possibility would be to soak only the top surface or the entire body of the removable layer 40, for example by immersing it in a bath containing a photochromic material, or by passing it through a roller system which coats the surface or soaks into the material.

A separate design layer 30 could be dispensed with if the photochromic or other active substance were to be incorporated into the backing layer 20. The backing layer might for example comprise two sheets of a plastics material sandwiching between them a design layer. The material of the backing layer itself might also be ultraviolet active.

Either the entire surface of the removable layer could be coated or only selected regions. In the latter case, the photochromic material could form a definite pattern, for example a logo, stripes or an abstract design. It would also be possible to incorporate bar codes, alphabetic or numeric data or patterns



representing certain coded information of relevance to the manufacturer/purchaser.

The exact type of photochromic ink or other marking material to be used for the design layer 30 will vary according to the use to which the final label is to be put. It is considered to be within the capabilities of a skilled man to choose appropriate substances for his particular application.

Where the label is to be used in circumstances where the design is to become visible under daylight once the removable layer 40 has been peeled back, it will be desirable to use little or no ultraviolet inhibitors within the layer 30. Thus, the photochromic molecules will be sensitive to ultraviolet light of many wavelengths. Alternatively, where the design is to become visible only on the application of ultraviolet light of a particular range of wavelengths, suitable inhibitors selective of that range of wavelength should be included. Exemplary photochromic printing inks include those which are disclosed in GB patent application 2214191 and European application 327788.

The removable layer 40 could comprise, instead of a layer which can be peeled off, a layer which can be scratched off in the manner of known "scratch cards". In that case the layer comprises a substance which the user can remove by gently scratching with a fingernail or coin so exposing the underlying design layer 30.

The releasable layer 40 should be opaque to ultraviolet radiation, or at least to that radiation which will

activate the particular photochromic substances in the design layer 30.

There may be a printed design (not shown), for example a bar code, on the removable layer.

It is within the contemplation of the applicant that the design layer 30 might incorporate in addition to a photochromic substance, or in place of it, another type of verifiable substance. Such substances might include ultraviolet reactive inks and marking materials, fluorescent inks and marking materials, magnetic inks and marketing materials, infrared inks and marking materials, transfer-type inks and marking materials, optical variable devices (thin films), holograms, or the use of rare earth minerals.

Where the design layer 30 does not incorporate a photochromic component, there may be no need for the removable layer 40 to be opaque to ultraviolet radiation.

The labels may conveniently be manufactured in sheets or strips and then cut up into the desired sizes.

**CLAIMS:**

1. A security label comprising a backing layer carrying or incorporating a verifiable or active means, and a removable upper layer which, when removed, allows the means to be exposed to an actuating influence.
2. A security label as claimed in Claim 1 in which the verifiable or active means includes a photochromic material.
3. A security label as claimed in Claim 1 or Claim 2 in which the actuating influence is ultraviolet light.
4. A security label as claimed in Claim 2 or Claim 3 in which the photochromic material is contained within an ink.
5. A security label as claimed in any one of the preceding claims in which the verifiable or active means includes fluorescent material.
6. A security label as claimed in any one of the preceding claims in which the verifiable or active means includes magnetic material.
7. A security label as claimed in any one of the preceding claims in which the verifiable or active means includes infra-red sensitive material.

8. A security label as claimed in any one of the preceding claims in which the verifiable or active means comprises an optical variable device.

9. A security label as claimed in any one of the preceding claims in which the verifiable or active means comprises a hologram.

10. A security label as claimed in any one of the preceding claims in which the verifiable or active means includes rare earth minerals.

11. A security label as claimed in any one of the preceding claims in which the verifiable or active means is contained within a design layer between the removable layer and the backing layer.

12. A security label as claimed in any one of the preceding claims in which the backing layer has a layer of adhesive for securement of the label to an article the genuineness of which is to be guaranteed by the label.

13. A security label as claimed in any one of the preceding claims in which the backing layer comprises part of an article the genuineness of which is to be guaranteed by the label.

14. A security label as claimed in any one of the preceding claims in which the removable layer has a layer of low-tack adhesive so that it can be removed and replaced several times.

15. A security label as claimed in any one of the preceding claims including a protective layer between verifiable or active means and the removable layer.

16. A security label as claimed in Claim 15 when dependent upon Claim 11 in which the protective layer is applied over the design layer.

17. A security label as claimed in any one of the preceding claims in which the removable layer is arranged to be peeled off.

18. A security label as claimed in any one of the preceding claims in which the removable layer is adapted to be scratched off.

19. A method of verifying the genuineness of an article comprising applying a verifiable or active means to an article or to a label affixed thereto, removing a protective layer from the means, applying an actuating influence to the means, and determining the genuineness or otherwise of the article according to the reaction of the means.

20. A security label essentially as specifically described with reference to the drawing.

21. A method of verifying the genuineness of an article substantially as specifically described.